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but that both are not necessarily implicated ; and that, in fact, cases occur where there are marked deviations from what may be considered the more common occurrence. Having observed such cases, and not being aware of any satisfactory explanation, the author examined with care the continuation upwards of the anterior and posterior columns of the spinal marrow into the *medulla oblongata* and found that the decussation at the upper part of the spinal marrow belonged in part to the columns for motion, and in part to the columns for sensation ; and farther, that the decussation is only partial with respect to either of these columns ; thus elucidating by the observation of the actual structure what before appeared very unsatisfactory in pathology, and anomalous in disease.

The paper is illustrated by drawings made from the dissections of the author.

“Description of a self-registering Thermometer and Barometer invented by the late James Coggan, Esq., and bequeathed by him to the Royal Society.” By Roderick Impey Murchison, Esq., F.R.S., V.P.G.S., &c.

The self-registering thermometer used by Mr. Coggan is of Six’s construction, and consists of a siphon tube, open at one extremity, and operating by the expansion and contraction of a large body of spirit pressing on a column of mercury in the lower bend of the tube. On the other side of the wooden frame to which this thermometer is fixed, a siphon barometer is attached ; and both these instruments are made to act on iron-floats suspended by a thread, and counterpoised over a pulley. Transverse wires are affixed to these threads, and are forced against a sheet of ruled paper on a frame, which from its connexion with a clock is advanced a certain space each day, by a spring hammer forming part of the striking machinery of the clock.

“On the action of light upon the colour of the River Sponge.” By John Hogg, M.A., F.L.S., C.P.S., &c., Fellow of St. Peter’s College, Cambridge. Communicated by Thomas Bell, Esq., F.R.S.

The author found that the green colour of the *Spongilla fluviatilis*, or river sponge, is acquired solely through the agency of light, and is lost when the sponge is removed from its influence. As this does not appear to be the case with *Actiniæ*, the *Hydra viridis*, or any other Polype, the author is disposed to consider this production as being nearer allied to the Algæ or Fungi, than to any tribe belonging to the animal kingdom.

“Researches on the Tides. Ninth Series. On the deduction of the Laws of the Tides, from short Series of Observations.” By the Rev. W. Whewell, M.A. Trin. Coll., Cambridge.

It is very desirable to ascertain whether it is possible to deduce the laws of the tides from short series of observations ; since, if it be so, not only does the construction of good tide tables for different places become more easy ; but also the value of tide tables is much increased, if the predicted tides agree with those of each year as well as with the mean of many years. The object of the author

in the present paper is to determine this point by the discussion of several years' observations of the tides at Plymouth and at Bristol. The calculations for the former place were executed by Mr. Dessiou and Mr. Ross in the Hydrographer's Office at the Admiralty; the calculations for Bristol were performed by Mr. Bunt, in virtue of a grant of money from the British Association. The result of these discussions is, that a very regular form and good approximation for the semimenstrual inequality may be obtained from the observations of one year; that the existence of the lunar parallax corrections appears very clearly in the observations of one year; and that its value may be determined from a series of three or four years. The lunar declination corrections are more irregularly given by short series of observations; but in a series of four or five years, the general form and approximate value of the corrections become manifest. In the course of these calculations such questions as the following were proposed, and their solution attempted: 1. To which transit of the moon ought we to refer the tide? It appears that the transit which produces the best accordance with theory, is that which Mr. Lubbock terms transit B, which is an epoch about 42 hours anterior to the high water at Bristol and Plymouth. 2. How does a change of the epoch affect, first, the semimenstrual inequality; secondly, the parallax correction of the time; thirdly, the declination correction of the times; fourthly, the parallax correction of heights; and fifthly, the declination correction of the heights? 3. Does the parallax corrections of height vary as the parallax? 4. Does the parallax correction of time vary as the parallax? 5. Does the declination correction of the heights vary as the square of the declination? 6. Does the declination correction of time vary as the square of the declination? 7. Can the laws of the corrections be deduced from a single year? 8. Are there any regular differences between the corrections of successive years? 9. Do the corrections at different places agree in themselves? It does not appear that any change of the epoch will produce an accordance of the observed laws with the theory, some of the inequalities requiring one epoch for this purpose, and some requiring another. The inequalities in different years and different places are also compared.

Mr. Whewell remarks, that since it has now been shown that good tide tables may be obtained from short series of observations, his researches with regard to the determination of the lunar corrections may be concluded; and the proper mode of farther prosecuting the subject, would be to have tide observations at several stations, each observatory reducing its own observations, and thus constantly improving the tables, as is practised in other branches of Astronomy.

“Researches in Embryology.” *First Series.* By Martin Barry, M.D., F.R.S.E., Fellow of the Royal College of Physicians in Edinburgh. Communicated by P. M. Roget, M.D., Sec. R.S.

This paper is divided into two parts. In the first part the author describes the origin and structure of the ovisac, a vesicle common